Drawing of the description

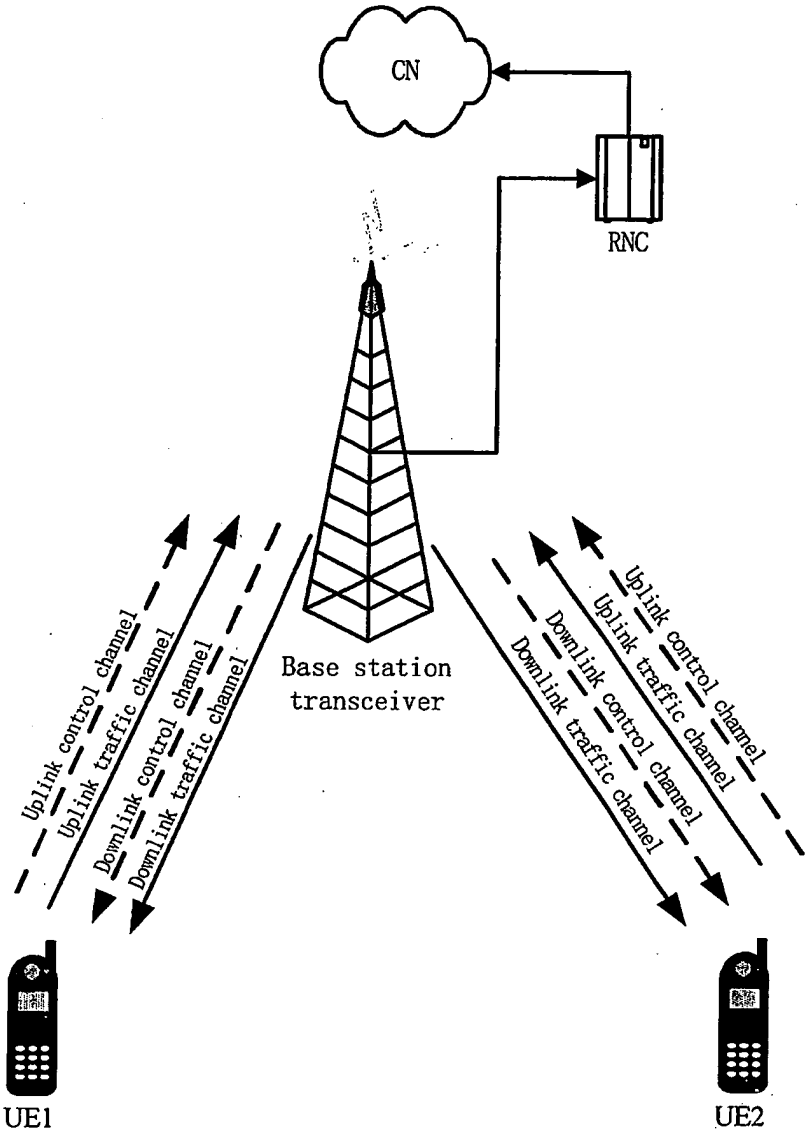

Fig.1

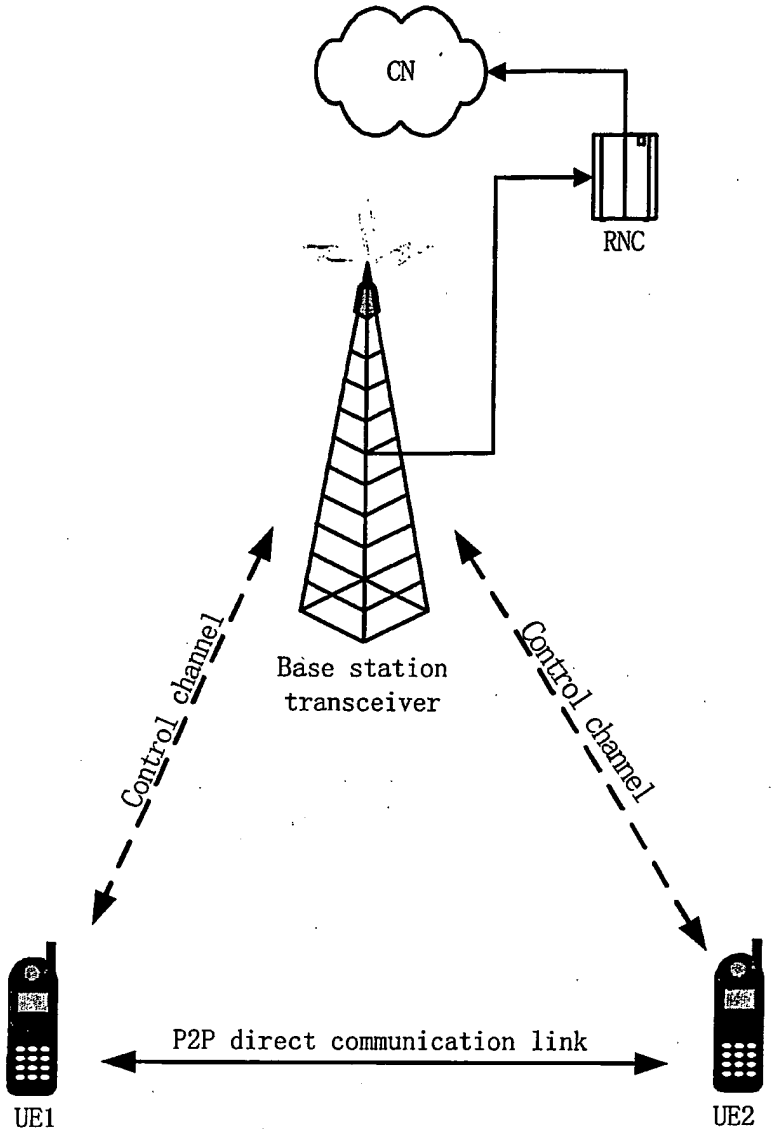
CN
RNC
Base station transceiver
Control channel
Control channel
P2P direct communication link
UE1
UE2

Fig.2

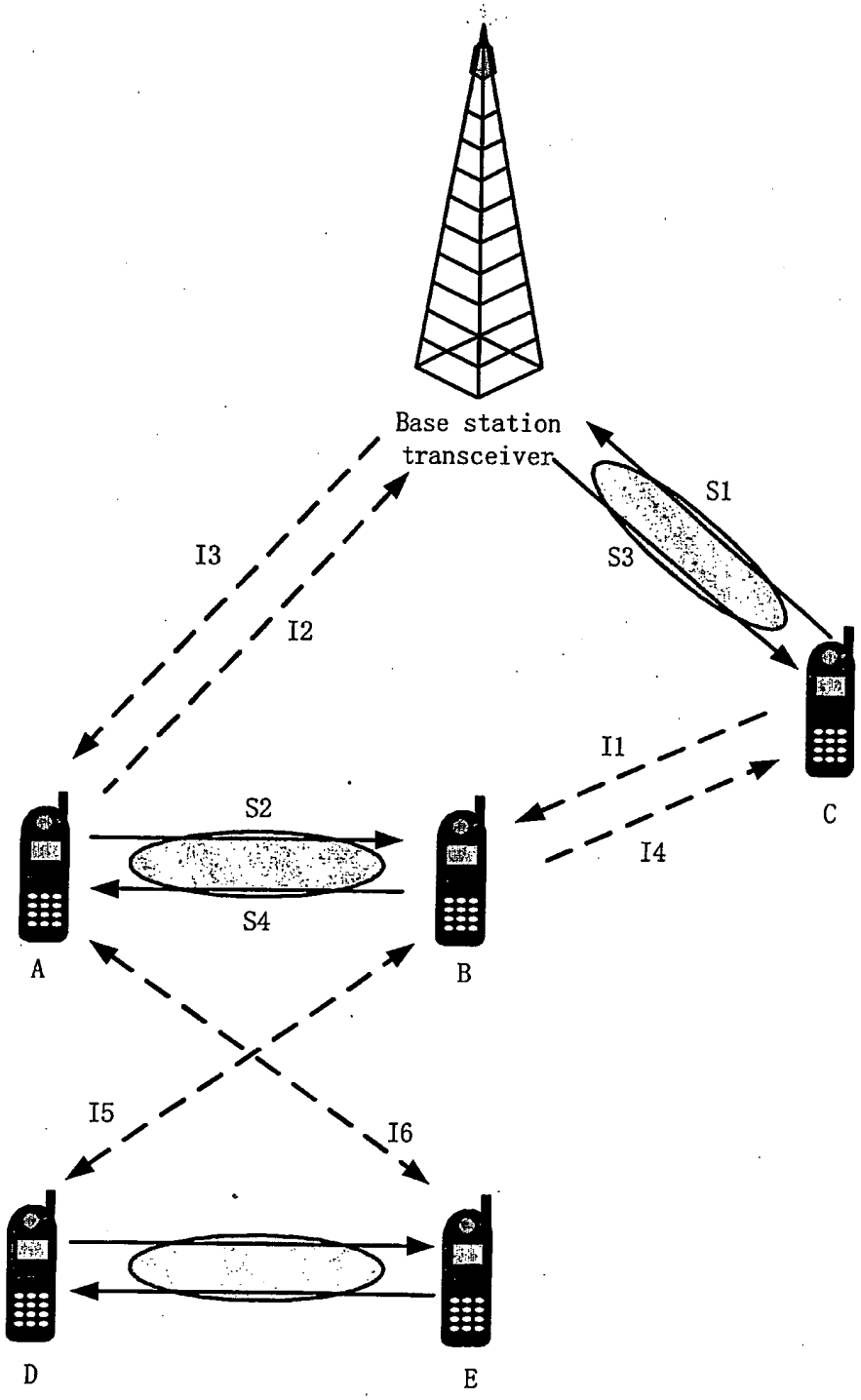

Fig.3

Code group	Associated codes			
	SYNC_DL ID	SYNC_UL ID (coding criteria)	**Scrambling Code ID** (coding criteria)	Basic midamble Code ID (coding criteria)
Code group 1	0	0 ~ 7 (000 ~ 111)	0(00)	0(00)
			1(01)	1(01)
			2(10)	2(10)
			3(11)	3(11)
Code Group 2	1	8 ~ 15 (000 ~ 111)	4(00)	4(00)
			5(01)	5(01)
			6(10)	6(10)
			7(11)	7(11)
. . .				
Code group 32	31	248 ~ 255 (000 ~ 111)	124(00)	124(00)
			125(01)	125(01)
			126(10)	126(10)
			127(11)	127(11)

Fig.4

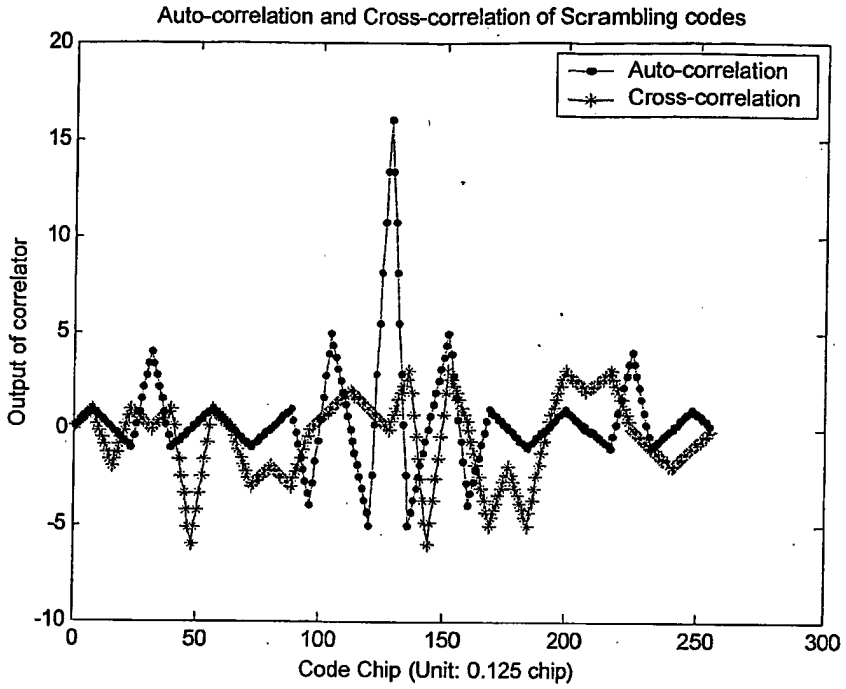
Auto-correlation and Cross-correlation of Scrambling codes
Auto-correlation
Cross-correlation
Output of correlator
Code Chip (Unit: 0.125 chip)
20
15
10
5
0
-5
-10
0
50
100
150
200
250
300

Fig.5

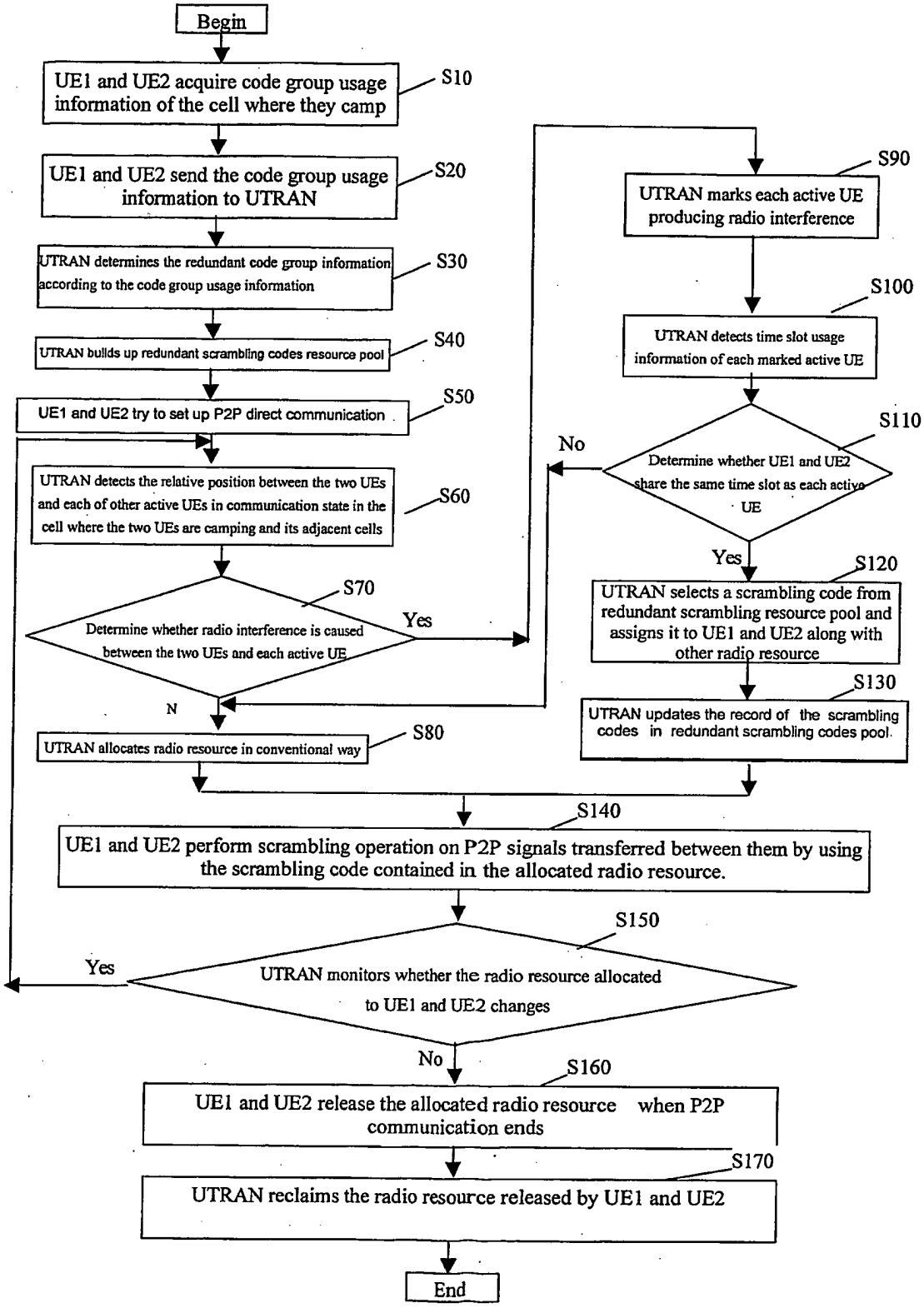
Begin
UE1 and UE2 acquire code group usage information of the cell where they camp
S10
UE1 and UE2 send the code group usage information to UTRAN
S20
UTRAN determines the redundant code group information according to the code group usage information
S30
UTRAN bulids up redundant scrambling codes resource pool
S40
UE1 and UE2 try to set up P2P direct communication
S50
UTRAN detects the relative position between the two UEs and each of other active UEs in communication state in the cell where the two UEs are camping and its adjacent cells
S60
Determine whether radio interference is caused between the two UEs and each active UE
S70
Yes
N
UTRAN allocates radio resource in conventional way
S80
UTRAN marks each active UE producing radio interference
S90
UTRAN detects time slot usage information of each marked active UE
S100
Determine whether UE1 and UE2 share the same time slot as each active UE
S110
No
Yes
UTRAN selects a scrambling code from redundant scrambling resource pool and assigns it to UE1 and UE2 along with other radio resource
S120
UTRAN updates the record of the scrambling codes in redundant scrambling codes pool.
S130
UE1 and UE2 perform scrambling operation on P2P signals transferred between them by using the scrambling code contained in the allocated radio resource.
S140
UTRAN monitors whether the radio resource allocated to UE1 and UE2 changes
S150
Yes
No
UE1 and UE2 release the allocated radio resource when P2P communication ends
S160
UTRAN reclaims the radio resource released by UE1 and UE2
S170
End

Fig.6

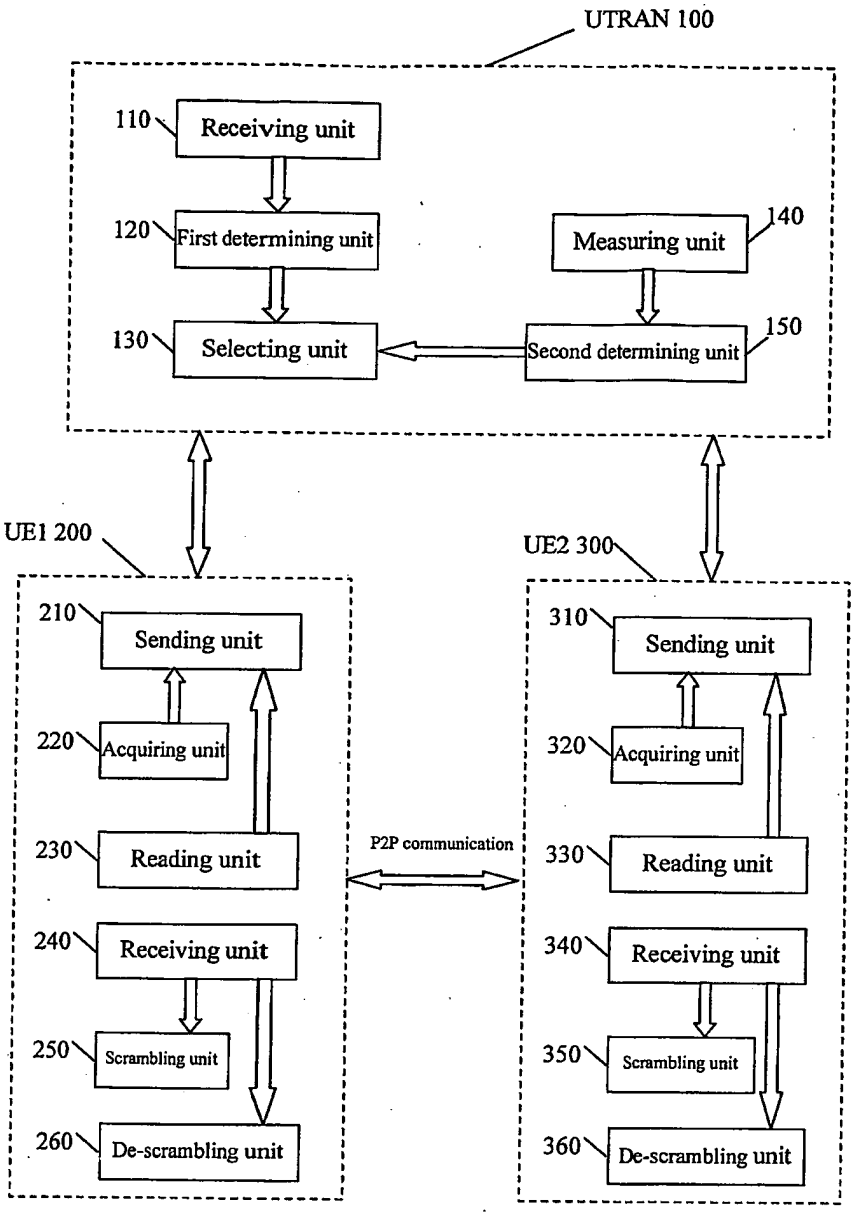
UTRAN 100
110
Receiving unit
120
First determining unit
130
Selecting unit
140
Measuring unit
150
Second determining unit
UE1 200
210
Sending unit
220
Acquiring unit
230
Reading unit
240
Receiving unit
250
Scrambling unit
260
De-scrambling unit
P2P communication
UE2 300
310
Sending unit
320
Acquiring unit
330
Reading unit
340
Receiving unit
350
Scrambling unit
360
De-scrambling unit

Fig.7